

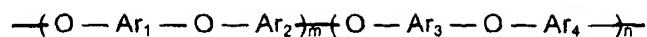
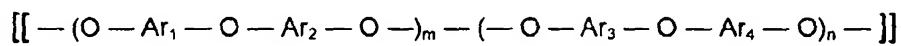
Appl. No. 10/046,615  
Amendment dated October 14, 2003  
Reply to Office Action of April 11, 2003

**Amendments To Claims**

This listing of claims will replace all prior versions and listings of claims in the subject patent application.

**Listing of Claims:**

Claim 1 (currently amended). A poly(arylene ether) polymer including polymer repeat units of the following structure:

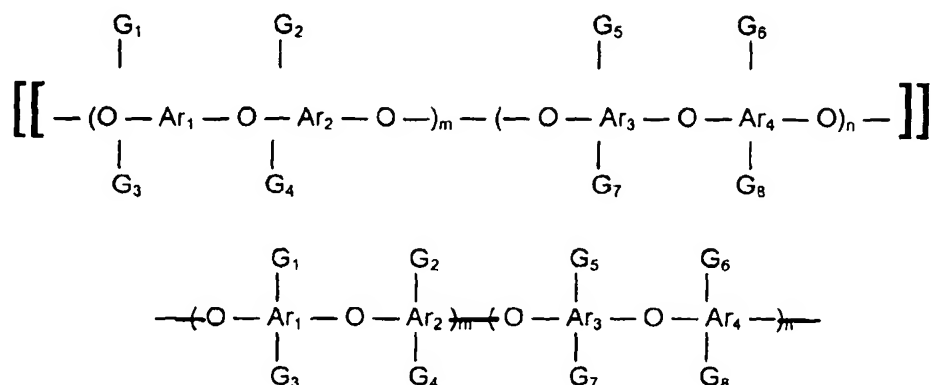


where  $\text{Ar}_1$ ,  $\text{Ar}_2$ ,  $\text{Ar}_3$ , and  $\text{Ar}_4$  are identical or different aryl radicals,  $m$  is 0 to 1,  $n$  is 1- $m$ , and at least one of the aryl radicals is grafted to at least one unsaturated group that is non-aromatic and is adapted to crosslink at a curing temperature below 200°C without producing volatiles during curing and without providing functional groups after curing.

Claim 2 (original). The polymer of claim 1, wherein one of the aryl radicals of the polymer repeat units is grafted to one unsaturated group.

Claim 3 (original). The polymer of claim 1, wherein at least one of the aryl radicals of the polymer repeat units is grafted to more than one unsaturated group.

Claim 4 (currently amended). The polymer of claim 3, wherein the polymer repeat units have the following structure:



where  $\text{G}_1$ ,  $\text{G}_2$ ,  $\text{G}_3$ ,  $\text{G}_4$ ,  $\text{G}_5$ ,  $\text{G}_6$ ,  $\text{G}_7$  and  $\text{G}_8$  are identical or different species of the at least one unsaturated group.

Claim 5 (original). The polymer of claim 1, wherein an average number of unsaturated groups per polymer repeat unit is 0.01 to 8.0.

Claim 6 (original). The polymer of claim 5, wherein the average number of unsaturated groups per polymer repeat unit is 0.01 to 4.0.

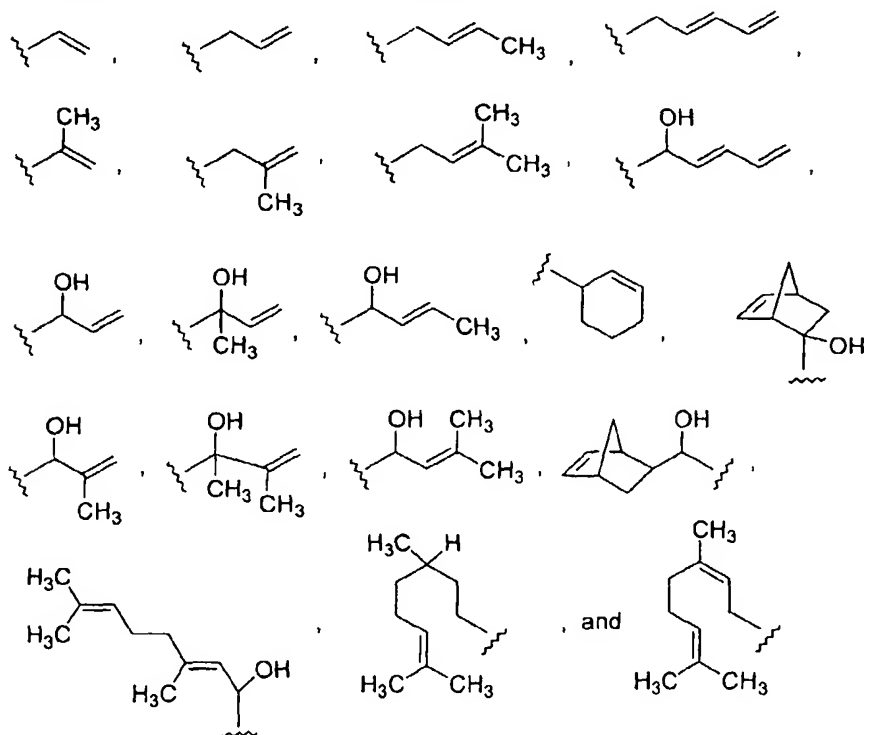
Claim 7 (original). The polymer of claim 5, wherein the average number of unsaturated groups per polymer repeat unit is 0.25 to 1.0.

Claim 8 (original). The polymer of claim 5, wherein the at least one unsaturated group is selected from the group consisting of an alkylene radical, an alkyldiene radical, an  $\alpha$ -hydroxyalkylene radical and an  $\alpha$ -hydroxyalkyldiene radical.

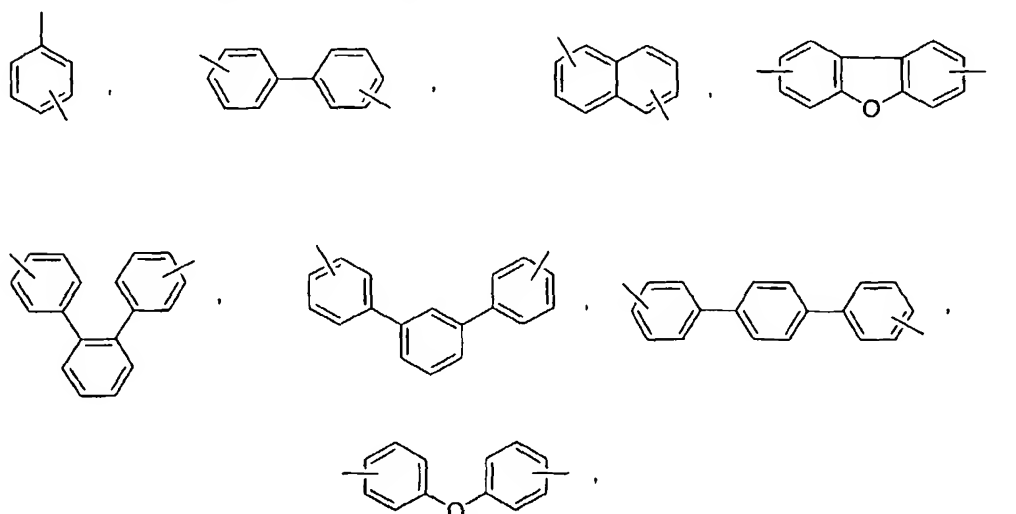
Claim 9 (original). The polymer of claim 5, wherein the at least one unsaturated group is derived from isoprene.

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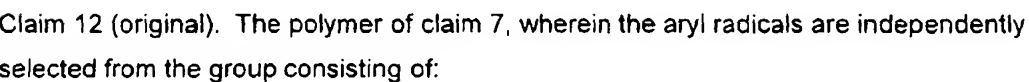
Claim 10 (original). The polymer of claim 5, wherein the at least one unsaturated group is selected from the group consisting of:



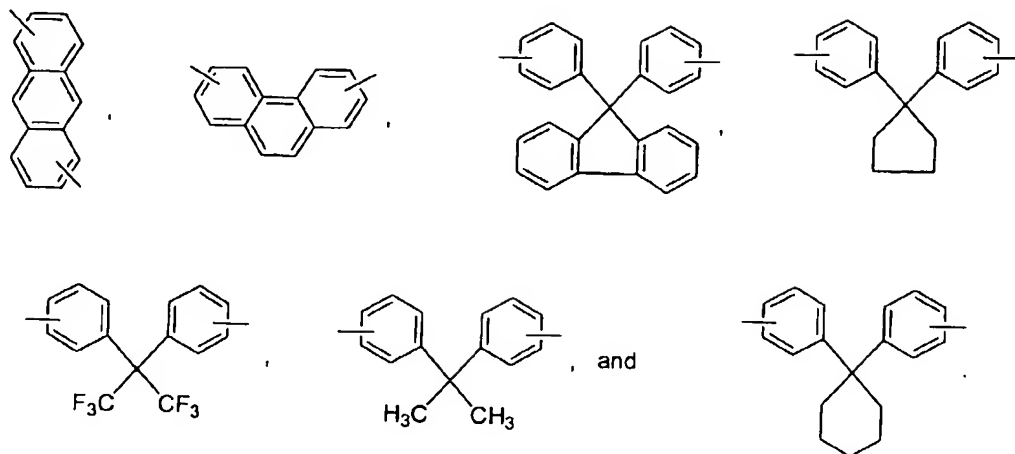
Claim 11 (original). The polymer of claim 5, wherein the aryl radicals are independently selected from the group consisting of:



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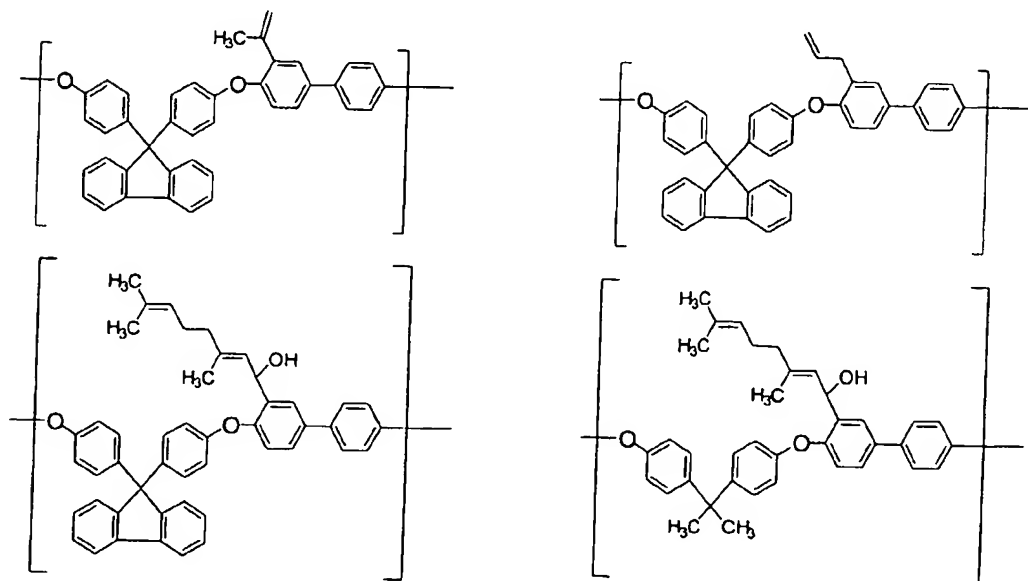


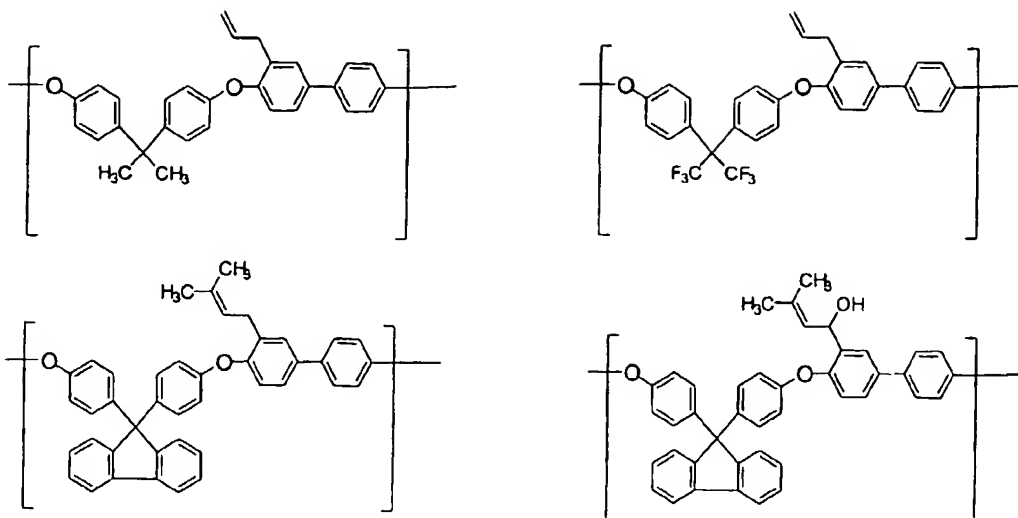
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Claim 13 (original). The polymer of claim 5, wherein at least one of the aryl radicals is selected from the group consisting of 9,9-bis(4-hydroxyphenyl)-fluorene, 2,2-diphenylhexafluoropropene and 2,2-diphenylpropene.

Claim 14 (currently amended). The polymer of claim 5, wherein the polymer ~~repeat unit~~ units m and n are independently selected from the group consisting of:

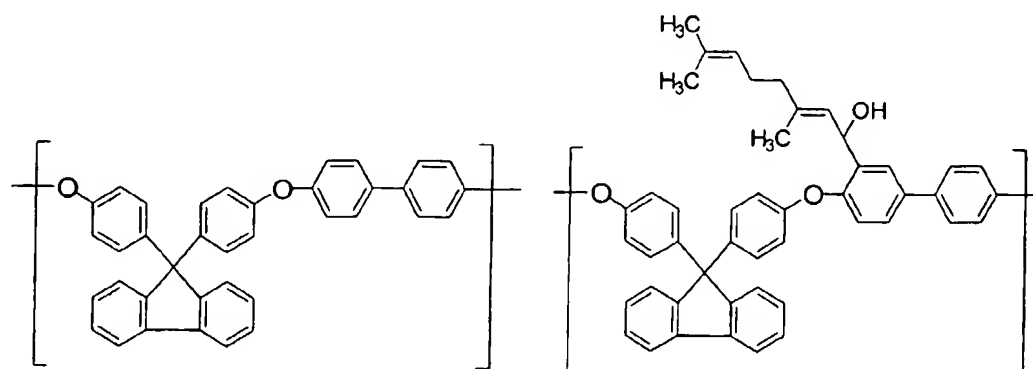




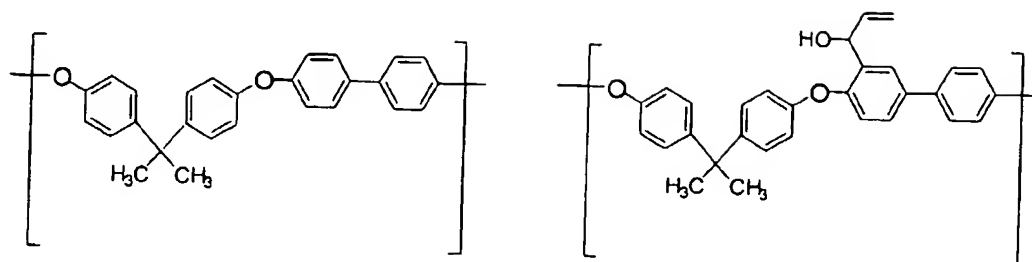
and corresponding non-grafted polymer repeat units.

Claim 15 (original). The polymer of claim 5, wherein the average number of unsaturated groups per polymer unit is more than 0.1 and not more than 1, and the poly(arylene ether) polymer comprises one of the following polymer repeat units m and n:

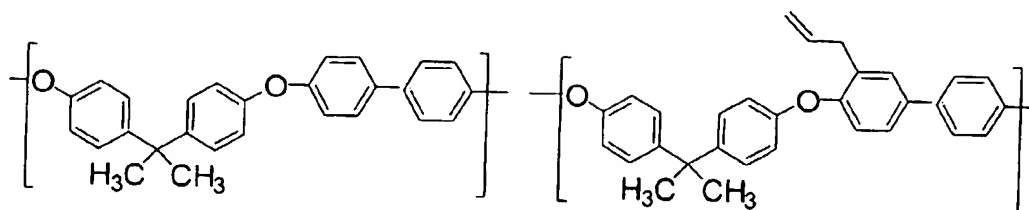
a)



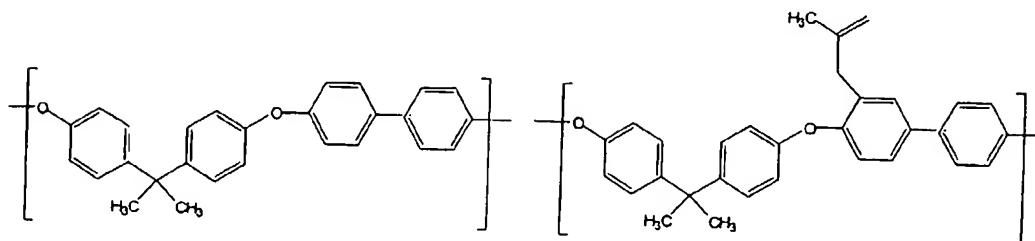
b)



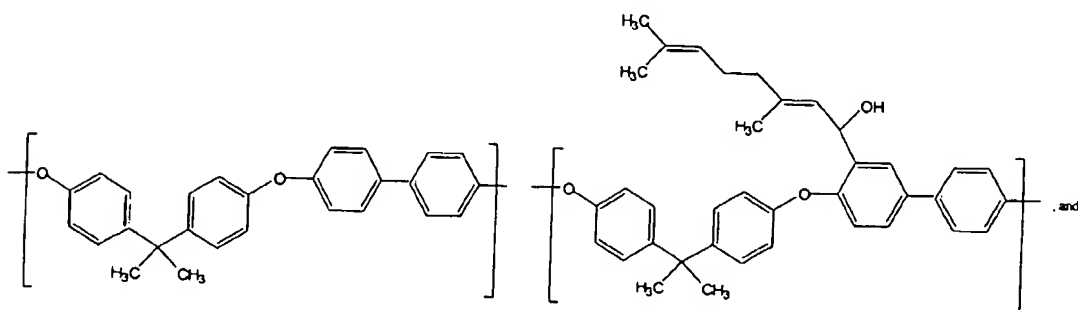
c)



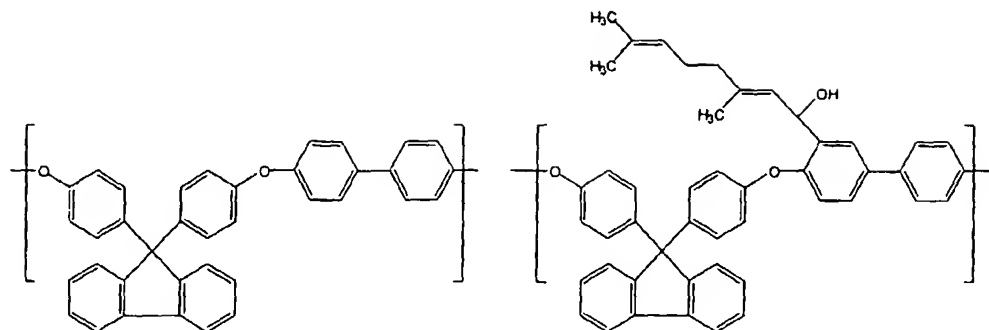
d)



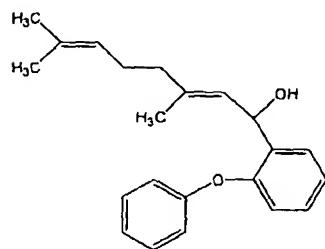
e)



f)



Claim 16 (original). The polymer of claim 5, wherein at least one of the aryl radicals is:



Claim 17 (original). The polymer of claim 5, wherein m is 0.05 to 0.95.

Claim 18 (original) The polymer of claim 5 in cured form, said cured form of the polymer having a Tg from 160 to 180°C, a dielectric constant below 2.7 with frequency independence, and a maximum moisture absorption of less than 0.17 wt%.

Claim 19 (original). The polymer of claim 5, in an interlayer dielectric film.

Claim 20 (original). The polymer of claim 5, in a die-attach adhesive.

Claim 21 (original). A composition comprising the polymer of claim 1 and a diluent, wherein the diluent does not afford a functional group or interfere with mechanical or electrical properties of the composition.



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Claim 22 (cancelled). A method for providing a substrate with a film having a Tg from 160°C to 180°C, a dielectric constant below 2.7 with frequency independence, and a maximum moisture absorption of less than 0.17 wt%, said method comprising applying the polymer of claim 1 to the substrate and heating the polymer to the curing temperature.

Claim 23 (cancelled). The method of claim 22, wherein the curing temperature is 170°C to 190°C.

Claim 24 (cancelled). The method of claim 22, wherein the heating of the polymer is conducted in the presence of a catalyst selected from the group consisting of a mineral acid, an organic acid, a free radical starter, an azoinitiator and mixtures thereof.

Claim 25 (cancelled). The method of claim 22, wherein the polymer is applied to the substrate in a composition further comprising a diluent that does not afford a functional group or interfere with mechanical or electrical properties of the composition.

Claim 26 (cancelled). The method of claim 22, wherein the film is a die-attach adhesive that bonds the substrate to a second substrate.

Claim 27 (cancelled). The method of claim 22, wherein the film is an interlayer dielectric that insulates the substrate from a second substrate.

Claim 28 (cancelled). The method of claim 22, wherein the heating of the polymer is initiated with UV radiation.